University of Zabol
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The Thesis Submitted to the Degree of M. SC.
In the Field of Animal Nutrition

Title

Study of chemical composition and nutritive value of treated *Alhagi Persarum* using *in situ* and *in vitro* methods

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Abstract
This study was carried out to evaluate changes in chemical composition and nutritional value of *Alhagi Persarum* silage by adding of urea, molasses and enzyme. For this aim *Alhagi persarum* forage were harvested and chopped with cutting length about 2 to 4 cm for ensiling. Then were mixed with the enzyme (3 g/kg DM), urea(%5) and molasses (%10) and ensiled in 5 Kg plastic baskets. The silages were opened after 45 days and chemical compositions inculuding dry matter (DM), organic matter (OM), ash, ether extract (EE), crude protein (CP), cell wall and cell wall without hemicelluloses were measured according to the standard procedure. Organic matter digestibility, metabolizable energy content and dry matter degradability were also determined by *in vitro* gas production and *in situ* nylon bags methods. Results showed that the addition of urea significantly increased in pH, CP, OM content and decreased EE, DM, ADF and NDF content respectively ($p<0.05$). Addition of molasses caused a significant increased in DM, EE content and decreased pH, ADF and NDF content ($p< 0.05$). Addition of enzyme caused a significant decreased ADF and NDF content ($p<0.05$). Addition of urea, molasses and enzyme mixture caused a significant different in CP, OM, ADF and EE compare with control. The *in situ* degradability showed an increase DM degradability from 38.49 to 40.06 percent in silage and with increasing of incubation times increased degradability content. Also, results of *in vitro* gas production revealed that in all incubation times after adding urea amount of gas production decreased but with adding molasses it was increased and with adding enzyme expect in time 2, 4, 6 and 8 gas production value was decreased. In conclusion, considering the changes in NDF and ADF contents and digestibility values in the present study, it can be recommendation that the use of supplements urea and molasses can be used to make good *Alhagi persarum* silage.

Key words: *Alhagi persarum,* Nutritive value, Silage, Enzyme, Dry matter degradability